European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC)

Fourth Report by the United Kingdom under Article 17

on the implementation of the Directive
from January 2013 to December 2018

Conservation status assessment for the species:

S1614 - Creeping marshwort (*Apium repens*)

UNITED KINGDOM

IMPORTANT NOTE - PLEASE READ

- The information in this document represents the UK Report on the conservation status of this species, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- It is based on supporting information provided by the geographically-relevant Statutory Nature Conservation Bodies, which is documented separately.
- The 2019 Article 17 UK Approach document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Maps showing the distribution and range of the species are included (where available).
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the UK assessments. Further underpinning explanatory notes are available in the related country-level reports.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; and/or (iii) the field was not relevant to this species (section 12 Natura 2000 coverage for Annex II species).
- The UK-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, https://jncc.gov.uk/article17, for further information on UK Article 17 reporting.

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

NATIONAL LEVEL

1. General information

1.1 Member State	**UK**
1.2 Species code	**1614**
1.3 Species scientific name	**Apium repens**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Creeping marshwort

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2013-2018
2.3 Distribution map	Yes
2.4 Distribution map Method used	Complete survey or a statistically robust estimate
2.5 Additional maps	No

3. Information related to Annex V Species (Art. 14)

3.1 Is the species taken in the wild/exploited?	No	
3.2 Which of the measures in Art. 14 have been taken?	a) regulations regarding access to property	No
	b) temporary or local prohibition of the taking of specimens in the wild and exploitation	No
	c) regulation of the periods and/or methods of taking specimens	No
	d) application of hunting and fishing rules which take account of the conservation of such populations	No
	e) establishment of a system of licences for taking specimens or of quotas	No
	f) regulation of the purchase, sale, offering for sale, keeping for sale or transport for sale of specimens	No
	g) breeding in captivity of animal species as well as artificial propagation of plant species	No
	h) other measures	No

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3.3 Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

a) Unit

b) Statistics/ quantity taken	Provide statistics/quantity per hunting season or per year (where season is not used) over the reporting period					
	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
Min. (raw, ie. not rounded)						
Max. (raw, ie. not rounded)						
Unknown	No	No	No	No	No	No

3.4. Hunting bag or quantity taken in the wild Method used

3.5. Additional information

BIOGEOGRAPHICAL LEVEL

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs

Atlantic (ATL)

4.2 Sources of information

Webb, J., 2017, Creeping marshwort Apium (Helosciadium) repens Port Meadow, 2017, Oxfordshire Flora Group, unpublished report to NE
Webb, J., 2017, Creeping marshwort Apium repens, North Hinksey meadow introduction site (field 1 of land SE of Willow Walk owned by OPT), 2017, Oxfordshire Flora Group, unpublished report to NE
Webb, J., 2014, Creeping marshwort Apium repens, Port Meadow, 2014. Oxfordshire Flora Group, unpublished report to NE
Lambrick, C. and Webb, J., 2015. Creeping marshwort, Apium repens, 2014, summary. Oxfordshire Flora Group, unpublished report to NE
Webb, J., 2014, Creeping marshwort Apium repens, North Hinksey meadow introduction site, 2014. Oxfordshire Flora Group, unpublished report to NE
Lambrick, C. R. and Webb, J. A., Creeping Marshwort, Apium repens, in Oxon in 2013., Ashmolean Natural History Society of Oxfordshire, Rare Plants Group, unpublished report
Lambrick, C. R., 2013, Creeping Marshwort, Apium repens, Translocation proposal., Ashmolean Natural History Society of Oxfordshire, Rare Plants Group, unpublished report
Webb, J., 2016, Creeping Marshwort, Apium repens, North Hinksey meadow introduction site (field 1 of land SE of Willow Walk owned by OPT), unpublished report, Ashmolean Natural History Society of Oxfordshire, Oxfordshire Flora Group.
Lambrick, C. R. and Morris, D., 2016, Creeping marshwort, Apium repens, at North Hinksey 20th Nov 2016, unpublished site visit report, Ashmolean Natural History Society of Oxfordshire, Oxfordshire Flora Group.
Webb, J., Creeping marshwort Apium (Helosciadium) repens,Port Meadow,

2016, unpublished report, Ashmolean Natural History Society of Oxfordshire, Oxfordshire Flora Group.
Webb, J. A., 2017, Apium repens Creeping Marshwort, Experimental Translocation, Port Meadow SSSI to Cutteslowe ponds, North Oxford. unpublished report, Ashmolean Natural History Society of Oxfordshire, Oxfordshire Flora Group.
Webb, J., 2015, Plants we monitor. Apium repens. In Ashmolean Natural History Society of Oxfordshire, Oxfordshire Flora Group, Newsletter, 2015, pp 4-7.
Webb, J., 2015, Creeping marshwort Apium repens, North Hinksey meadow introduction site, 2015. unpublished report, Ashmolean Natural History Society of Oxfordshire, Oxfordshire Flora Group.
Webb, J. A., 2015, Apium repens Creeping Marshwort, Experimental Translocation North Hinksey to Port Meadow SSSI new area near Burgess Field Corner and Shiplake Ditch, unpublished report, Ashmolean Natural History Society of Oxfordshire, Oxfordshire Flora Group.
Stroh, P. & Rumsey, F., 2018. Apium repens (Creeping Marshwort) in England - on the brink of extinction? BSBI News 138, April 2018, 15-17

5. Range

5.1 Surface area (km²)	200	
5.2 Short-term trend Period	2013-2018	
5.3 Short-term trend Direction	Decreasing (-)	
5.4 Short-term trend Magnitude	a) Minimum	b) Maximum
5.5 Short-term trend Method used	Complete survey or a statistically robust estimate	
5.6 Long-term trend Period		
5.7 Long-term trend Direction		
5.8 Long-term trend Magnitude	a) Minimum	b) Maximum
5.9 Long-term trend Method used		
5.10 Favourable reference range	a) Area (km²)	400
	b) Operator	
	c) Unknown	
	d) Method	The FRR for range is the same as in 2013. The value is considered to be large enough to support a viable population and no lower than the range estimate when the Habitats Directive came into force in the UK. For further details please see the 2019 Article 17 UK Approach document and country level information.
5.11 Change and reason for change in surface area of range	Genuine change	
	The change is mainly due to:	Genuine change
5.12 Additional information	There has been genuine change in the range surface area for this species due to loss of part of the UK population since 2013. The current surface area is more than 10% below the FRR and is decreasing. The short term trend in range was derived by comparing the range in 2013 with range in 2019 and by considering expert opinion.	

6. Population

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6.1 Year or period	2013-2018	
6.2 Population size (in reporting unit)	a) Unit	number of map 1x1 km grid cells (grids1x1)
	b) Minimum	
	c) Maximum	
	d) Best single value	5
6.3 Type of estimate	Best estimate	
6.4 Additional population size (using population unit other than reporting unit)	a) Unit	number of localities (localities)
	b) Minimum	
	c) Maximum	
	d) Best single value	2
6.5 Type of estimate	Best estimate	
6.6 Population size Method used	Complete survey or a statistically robust estimate	
6.7 Short-term trend Period	2007-2018	
6.8 Short-term trend Direction	Decreasing (-)	
6.9 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.10 Short-term trend Method used	Complete survey or a statistically robust estimate	
6.11 Long-term trend Period	1994-2018	
6.12 Long-term trend Direction	Increasing (+)	
6.13 Long-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.14 Long-term trend Method used		
6.15 Favourable reference population (using the unit in 6.2 or 6.4)	a) Population size	6 with unit number of localities (localities)
	b) Operator	
	c) Unknown	
	d) Method	The FRP is the same as in 2013. The value is considered to be large enough to support a viable population and no lower than the estimate when the Habitats Directive came into force in the UK. For further information see the 2019 Article 17 UK Approach document and relevant country-level reporting information.
6.16 Change and reason for change in population size	Genuine change	
	The change is mainly due to:	Genuine change
6.17 Additional information	Number of localities was used in 2013 as the population unit to assess the population parameter. There has been a clear decrease from 7 to 5 occupied monads (or from 4 to 2 localities) since 2007 and the current population is now	

more than 25% below the FRP.

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat	a) Are area and quality of occupied habitat sufficient (for long-term survival)?	Unknown
	b) Is there a sufficiently large area of unoccupied habitat of suitable quality (for long-term survival)?	Unknown
7.2 Sufficiency of area and quality of occupied habitat Method used	Insufficient or no data available	
7.3 Short-term trend Period	2007-2018	
7.4 Short-term trend Direction	Decreasing (-)	
7.5 Short-term trend Method used	Based mainly on extrapolation from a limited amount of data	
7.6 Long-term trend Period		
7.7 Long-term trend Direction		
7.8 Long-term trend Method used		
7.9 Additional information		

8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Abandonment of grassland management (e.g. cessation of grazing or mowing) (A06)	M
Modification of flooding regimes, flood protection for residential or recreational development (F28)	H
Other invasive alien species (other then species of Union concern) (I02)	M

Threat	Ranking
Abandonment of grassland management (e.g. cessation of grazing or mowing) (A06)	H
Modification of flooding regimes, flood protection for residential or recreational development (F28)	H
Other invasive alien species (other then species of Union concern) (I02)	M

8.2 Sources of information

8.3 Additional information

9. Conservation measures

9.1 Status of measures	a) Are measures needed?	Yes
	b) Indicate the status of measures	Measures identified and taken

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9.2 Main purpose of the measures taken	Expand the current range of the species (related to 'Range')
9.3 Location of the measures taken	Both inside and outside Natura 2000
9.4 Response to the measures	Medium-term results (within the next two reporting periods, 2019-2030)
9.5 List of main conservation measures	

Management, control or eradication of other invasive alien species (CI03)

Restore habitats impacted by multi-purpose hydrological changes (CJ03)

Reintroduce species from the directives (CS02)

Improvement of habitat of species from the directives (CS03)

9.6 Additional information

10. Future prospects

10.1 Future prospects of parameters	a) Range	Bad
	b) Population	Bad
	c) Habitat of the species	Poor
10.2 Additional information	Future trend of Range is Very Negative - decreasing >1% (more than one percent) per year on average; Future trend of Population is Very Negative - decreasing >1% (more than one percent) per year on average; and Future trend of Habitat for the species is Negative - slight/moderate deterioration. For further information on how future trends inform the Future Prospects conclusion see the 2019 Article 17 UK Approach document.	

11. Conclusions

11.1. Range	Unfavourable - Bad (U2)
11.2. Population	Unfavourable - Bad (U2)
11.3. Habitat for the species	Unfavourable - Inadequate (U1)
11.4. Future prospects	Unfavourable - Bad (U2)
11.5 Overall assessment of Conservation Status	Unfavourable - Bad (U2)
11.6 Overall trend in Conservation Status	Deteriorating (-)
11.7 Change and reasons for change in conservation status and conservation status trend	a) Overall assessment of conservation status No change The change is mainly due to: b) Overall trend in conservation status Genuine change The change is mainly due to: Genuine change
11.8 Additional information	Conclusion on Range reached because: (i) the short-term trend direction in Range surface area is decreasing by more than 1% per year; and (ii) the current Range surface area is more than 10% below the Favourable Reference Range.

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Conclusion on Population reached because: (i) the short-term trend direction in Population size is decreasing by more than 1% per year; and (ii) the current Population size is more than 25% below the Favourable Reference Population.
Conclusion on Habitat for the species reached because: (i) the area of occupied habitat is unknown and (ii) the habitat quality is unknown for the long-term survival of the species; and (iii) the short-term trend in area of habitat is decreasing.
Conclusion on Future prospects reached because: (i) the Future prospects for Range are bad; (ii) the Future prospects for Population are bad; and (iii) the Future prospects for Habitat for the species are poor.
Overall assessment of Conservation Status is Unfavourable-bad because one or more of the conclusions are Unfavourable-bad. Overall trend in Conservation Status is based on the combination of the short-term trends for Range - declining, Population - declining, and Habitat for the species - declining.
Overall assessment of Conservation Status has not changed since 2013.
Overal Trend in Conservation Status has changed from Stable in 2013 to Deteriorating because Range trend has changed from Stable to Deteriorating and Population trend has changed from Stable to Deteriorating.

12. Natura 2000 (pSCIs, SCIs and SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network (on the biogeographical/marine level including all sites where the species is present)	a) Unit	number of map 1x1 km grid cells (grids1x1)
	b) Minimum	
	c) Maximum	
	d) Best single value	4
12.2 Type of estimate		Best estimate
12.3 Population size inside the network Method used		Complete survey or a statistically robust estimate
12.4 Short-term trend of population size within the network Direction		Stable (0)
12.5 Short-term trend of population size within the network Method used		Complete survey or a statistically robust estimate
12.6 Additional information		

13. Complementary information

13.1 Justification of % thresholds for trends	
13.2 Trans-boundary assessment	
13.3 Other relevant Information	

Distribution Map

Figure 1: UK distribution map for S1614 - Creeping marshwort (*Apium repens*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The 10km grid square distribution map is based on available species records within the current reporting period. For further details see the 2019 Article 17 UK Approach document.

Range Map

Figure 2: UK range map for S1614 - Creeping marshwort (*Apium repens*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The range map has been produced by applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) to the 10km grid square distribution map presented in Figure 1. The alpha value for this species was 20km. For further details see the 2019 Article 17 UK Approach document.

Explanatory Notes

Species name: Apium repens (1614)

Field label	Note
2.1 Sensitive species	No evidence of any collection threat for this species or threat from other indirect effects (e.g. compaction of trampling) so not considered sensitive
2.4 Distribution map; Method used	Annual surveys of the Oxfordshire populations are conducted by the Oxfordshire Flora Group (formerly by the Ashmolean Natural History Society). The former site in Walthamstow has been searched on multiple occasions during the reporting period but no plants have been found there. Data is therefore considered good and complete.
2.3 Distribution map	Data from BSBI's Distribution Database for 2013 onwards sent to George Hinton 19-7-18.

Species name: Apium repens (1614) Region code: ATL

Field label	Note
5.3 Short term trend; Direction	Species now appears lost from Walthamstow site (Essex), where found in 2002 and present in the last reporting round but not seen during 2013-2018 . Occupied hectads therefore decreases from 2 to 1.
5.10 Favourable reference range	This is the figure set for the FRV in 2007 with the following comment: 'This species has always had a restricted range in the UK, although the current range is less than occurred in the middle of the twentieth century. It is currently present in only two catchment areas, with multiple sites in one of these catchments. This means that the plant is at substantial risk of extinction from chance events affecting the catchments, and it is unlikely to be viable in the long-term. Expert opinion is that range should include at least one additional catchment to counteract this shared risk. Thus, the minimum favourable reference range has been set as 300 km2. This figure would still be low (the extent of occurrence for the date class 1930-1969 is calculated at 610 km2), and consideration needs to be given as to whether this really would be sufficient for long-term viability.'
5.11 Change and reason for change in surface area of range	Genuine change due to loss of the Essex population since the last reporting round.
6.2 Population size	In the third reporting round localities was used as the unit. In the third reporting round the records came from four localities, three within 3 km of each other near Oxford (main site - Port Meadow, Binsey Green (restored) and North Hinksey (introduced)), and at one locality at Walthamstow. Numbers of localities was used as a proxy for population size, since the populations at each site undergo large fluctuations, making the number of individuals (in any case very difficult to assess due to the creeping growth form) a poor measure. The EU recommended unit of 1km squares (monads) is used here and works as well. The number of occupied monads in the third reporting round was 7.
6.4 Additional population size	Number of localities was used in the third reporting round and has fallen from four to just two: Port Meadow and North Hinksey, following its apparent disappearance from Binsey (due to lack of management) and Walthamstow (likely to be a combination of factors).
6.8 Short term trend; Direction	Clear decrease from 7 to 5 occupied monads (or from 4 to 2 localities) over the past two reporting cycles, reflecting the loss of the Binsey and Walthamstow populations.
6.12 Long term trend; Direction	In 1994 the species was only known from one location (Port Meadow). In the current reporting period it was present at two locations, although this has been as high as 4 in the intervening period and the short term trend differs from this.

6.16 Change and reason for change in population size	In 1994 the species was only known from one location (Port Meadow). Subsequently the number of localities increased to 4: it was introduced to North Hinksey in 1996; and appeared in Binsey Green in 1999 and Walthamstow in 2002. With no records from two of the localities in 2013-18 it has now retreated to two locations but this still represents an increase on the situation in 1994.
7.1 Sufficiency of area and quality of occupied habitat	The main site, Port Meadow in Oxford, is an extensive neutral grassland on the Thames flood-plain with a history of continuous grazing for thousands of years. The characteristic associations of plants at this site reflect as well as any other grassland in Britain the influence of grazing treatment on the balance of species. It is assumed the plant has been here for a very long time so the area of habitat is assumed to be sufficient. Recent concerns about reduction in habitat quality are of greater concern than its relatively limited extent. The habitat at Walthamstow Marshes was restricted to a moderately open area created by ditch management on the edge of pasture which had been ungrazed for many years and become tall herb vegetation. Grazing was restored and it was hoped that open poached areas along the ditch will increase as result of the grazing management. A recent cessation in grazing, however, saw the plant disappear from this site.
7.2 Sufficiency of area and quality of occupied habitat; Method used	Given as insufficient because lowland grazed wetland habitats on similar soils are not that restricted. Presumably a combination of factors that are not fully understood make this a rare and restricted species. Therefore we don't know exactly what the right habitat for the species is like and can't say we have sufficient to sustain it.
7.4 Short term trend; Direction	The area of habitat is broadly similar now to the situation in 2007 but the loss of the plant from two localities in this period shows that habitat quality, on some sites at least, has reduced.
7.5 Short term trend; Method used	All known sites are regularly monitored with reports on the size and health of the population, habitat management and other relevant issues. These reports have recently raised concerns about: changes in drainage that are suspected to have resulted in generally driers sites; reduction in the numbers of grazing animals and subsequent increased rankness of vegetation (the species is a poor competitor); and increased summer flooding events at the main site (Port Meadow) which can kill large numbers of plants (although they can also open up the vegetation and create suitable conditions for recolonisation).
8.2 Sources of information	The sources listed in 4.2 provide details of the listed threat and pressures
9.1 Status of measures	Measures are required to maintain the historic management of the key site including its grazing and hydrological regime (occasional winter flooding events). All sites require grazing management to maintain the open and short vegetation where the species grows as well as winter-wet/summer drier regimes. Conservation (re)introductions needed to restore range to a more favourable level. Efforts to maintain or re-establish grazing on all recent sites continue apart from Binsey. Water regimes are problematic - summer floods can be damaging and are linked to climate change and cannot be addressed easily at a local level. Main site is designated SAC, successful introduction site a Local Nature Reserve. Plants are grown ex-situ for potential future introductions to other sites with the right hydrological and grazing regimes. In the UK, A. repens is protected under Schedule 4 of the Conservation (Natural Habitats, etc.) Regulations 1994, and Schedule 8 of the Wildlife and Countryside Act 1981, as amended.
9.5 List of main conservation measures	Efforts have continued to try and eradicate Crassula helmsii from Port Meadow. So far they have prevented further spread and limited its extent but it has not been eradicated (which is extremely difficult and has hardly ever been done successfully). Maintaining it in a small area might be considered a success. One successful reintroduction has been done and efforts to find a suitable further site or sites continue. Efforts to maintain grazing on sites continue. Dealing with changes in hydrological regime is probably the most challenging of the conservation measures.

10.1 Future prospects of parameters	Unimproved pasture is threatened in England and the plant is restricted to very few sites. There are possible threats from Crassula helmsii, low winter water levels, high summer water levels and undergrazing. This appears to be a plant of mobile river floodplains where rapidly changing conditions create open environments in which this plant is an early colonizer - maintaining suitable conditions on small sites is difficult. As yet, few realistic options for expansion of this species have been identified (most historic sites now contain unsuitable habitat for this species). Efforts to locate sites with winter flooding, short sward and some poaching (like the introduction site at North Hinksey) continue. The plant does not seem to be restricted to species-rich well-established swards.
11.1 Range	In the third round although range had increased since the Habitats Directive came into force, the current range was still more than 10% below the favourable reference range. Hence, in accordance with Annex C, the assessment is Unfavourable - Bad. However, because this species has flourished at one of the introduction sites (which suggests it might be possible for its range to be extended) and it has appeared naturally at another disjunct site, it was also noted as improving. Now it has been lost from the disjunct new site, so the improvement has been reverved. It persists on the introduction site but concerns have been expressed about problems finding suitable grazing animals for the site.
12.1 Population size inside the pSCIs, SCIs and SACs network	Recorded from four monads in the single SAC site, Port Meadow, which is the key location.
12.2 Type of estimate	See above - complete surveys conducted annually by Oxfordshire Flora Group.
12.4 Short term trend of the population size within the network; Direction	The number of plants fluctuates greatly from year to year, as does the area occupied. Overall the population in the SAC is considered stable, although threats exist here and a cessation of grazing could rapidly cause significant problems for the species, as could the impacts of hydrological change.